



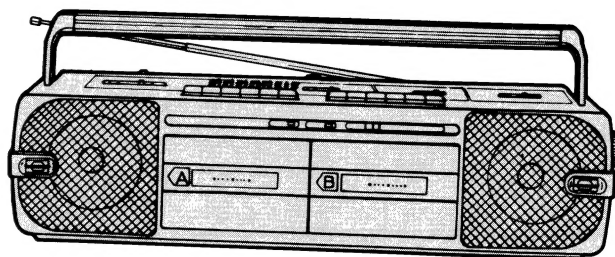
GoldStar

SERVICE MANUAL

STEREO DOUBLE CASSETTE RECORDER

CAUTION

BEFORE SERVICING THE CHASSIS, READ THE "SAFETY
PRECAUTIONS", IN THIS MANUAL



MODEL: TWS-7113




GoldStar

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SAFETY PRECAUTION

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be assured by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual. Electrical components having such features are identified by a  in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics are specified in the parts list may create shock, fire or other hazards.

SPECIFICATIONS

• MW RADIO

Frequency Range	515-1630 kHz
Intermediate Frequency	465 ± 1 kHz (OPTION)
Usable Sensitivity	58 dB (Output 50mW)
S/N Ratio	35 dB
I.F. Rejection Ratio	30 dB
10% T.H.D. Power Output	1500 mW (DC)
	1300 mW (AC)
T.H.D.	4%
Frequency Response	100-2,000 Hz (74 dB Input)

• FM RADIO

Frequency Range	87.35-108.25 MHz
Intermediate Frequency	10.7 ± 0.1 MHz (OPTION)
Usable Sensitivity	20 dB
S/N Ratio	45 dB
I.F. Rejection Ratio	50 dB
Automatic Frequency Control	400-800 kHz
10% T.H.D. Power Output	1500/1300 mW (DC/AC)
T.H.D.	3%
Frequency Respose	0 ± 4 dB
Stereo Separation	20 dB
Stereo T.H.D.	7%

• SW RADIO

Frequency Range	5.7-18.5 MHz
Intermediate Frequency	465 ± 1 kHz (OPTION)
Usable Sensitivity	45 dB (400 Hz, 30% Mod.)
S/N Ratio	35 dB
Maximum Sensitivity	40 dB
Image Rejection	5 dB (At Max Sens)

• TAPE RECORDER

Tape Speed	4.75 cm/sec
Wow & Flutter	0.35% (JIS WRMS)
Frequency Response	± 6 dB
Distortion	4% (PLAY), 8% (REC/PLAY)
10% T.H.D. Output	1500/1300 mW
S/N Ratio	40 dB (PLAY), 30 dB (REC/PLAY)
Erase Ratio	40 dB

• **GENERAL**

Circuit System	4 Track 2 Channel Stereo
Speaker	Woofer (3.5") 4 ohm × 2 Tweeter piezo × 2
Power Source	DC: 9V ("D" cell × 6) AC: 220V/50Hz
Antenna	FM/SW; Telescopic Rod Antenna MW: Ferrite Bar Antenna

DIAL CORD STRINGING

1. Referring to figure 8, loop the dial cord in the direction of arrows.
2. Dial pointer on scale plate is in low position.

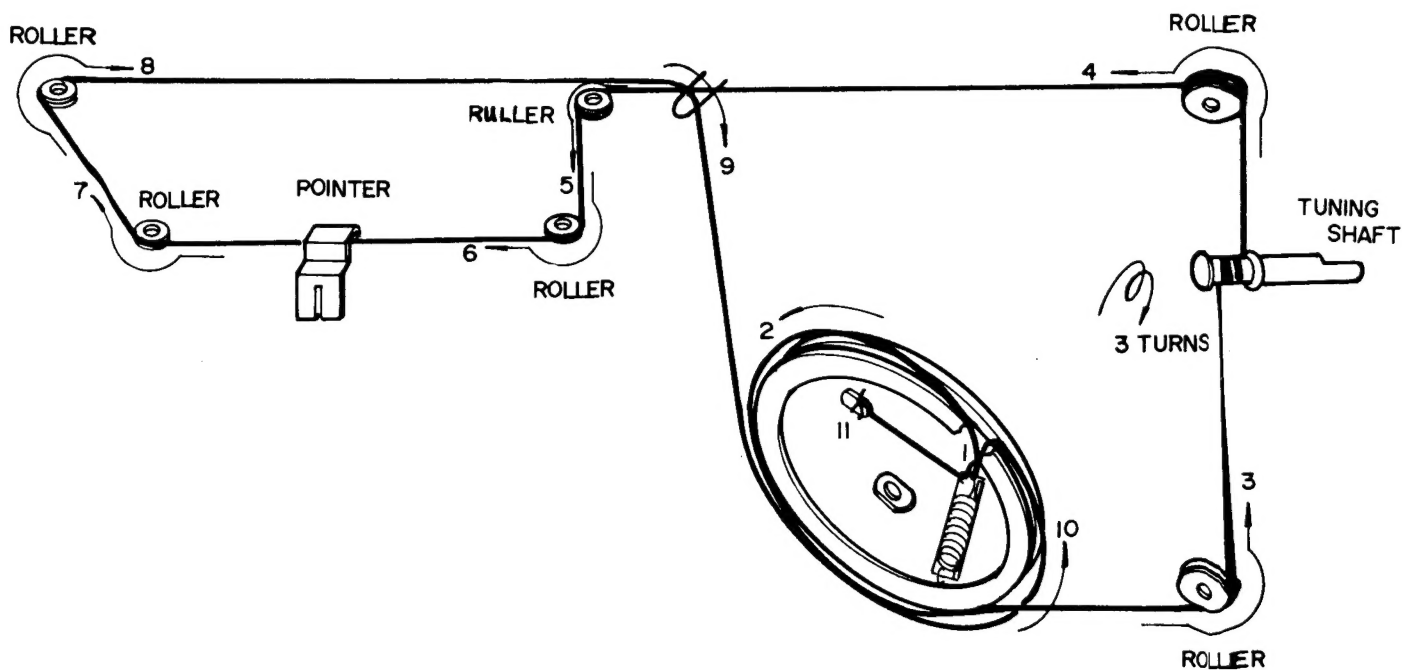


Figure 1.

Set the tuning capacitor to minimum frequency and string the cord following the numbers in figure 1.

ADJUSTMENT

• EQUIPMENT NEEDED

1. AM Signal Generator
2. FM Signal Generator
3. IF Sweep Generator with marker Capabilities
4. FM Stereo Signal Generator
5. Oscilloscope
6. Output Meter (SSVM)
7. FM MPX Signal Generator
8. Frequency Counter
9. Nonmetallic Alignment Tools

• IMPORTANT

1. Check power-source voltage.
2. Set the function switch to band being aligned.
3. Turn volume control to minimum unless otherwise noted.
4. Connect low side of signal source and output indicator to chassis ground unless otherwise specified.
5. Keep the signal input as low as possible to avoid AGC and AFC action.
6. Standard modulation is 1000 Hz at 30% for AM. (1000 Hz at 22.5 kHz deviation for FM)

• LOCATION OF ADJUSTMENT POINTS

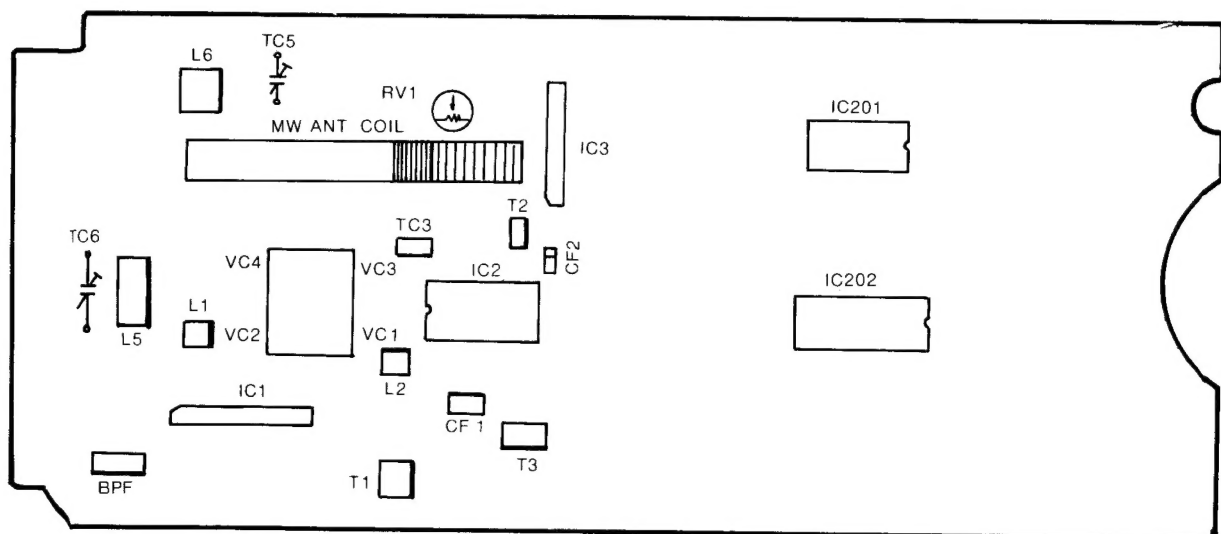


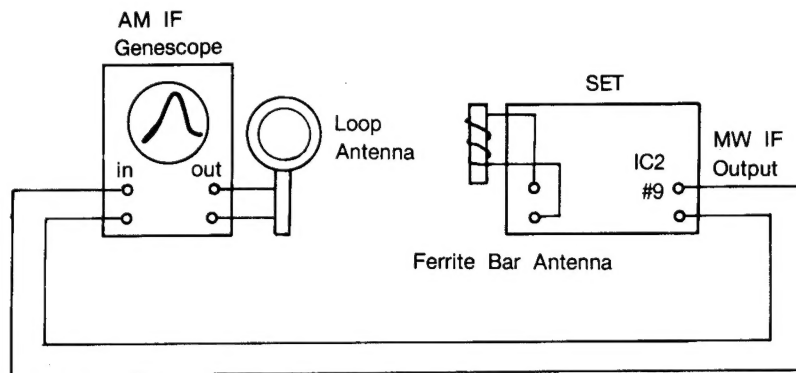
Figure 2. P.C. BOARD

• MW IF ADJUSTMENT

IF Genescope The input connects to Pin No. 9 of IC2 and the output connects to the MW antenna coil (L3) through loop antenna.

Adjust for the IF wave form of genescope to be maximum.

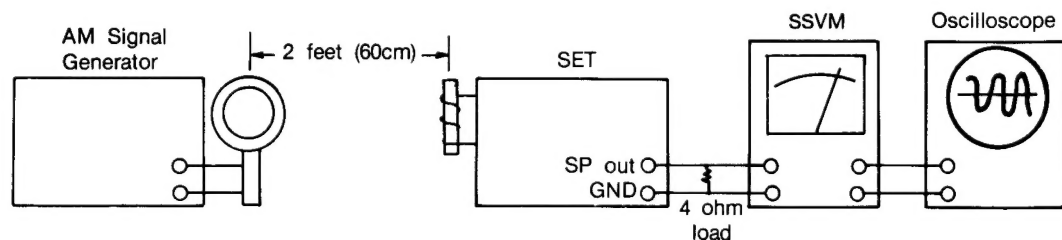
Sequent	Dial pointer position	Genescope output (kHz)	Adjustment
1	Highest frequency	465	T2
		Repeat step several times.	



• MW RF ADJUSTMENT

Signal Generator Connects to MW antenna coil (L3) through loop antenna.
Adjust for the indication of SSVM or the wave form of scope to be maximum.

Sequent	Dial pointer position	SG output (kHz)	Adjustment
1	Lowest frequency	515	L4
2	Highest frequency	1630	TC3
3	Repeat Steps 1 and 2 several times.		
4	600 kHz	600	L3
5	1400 kHz	1400	TC4
6	Repeat steps 4 and 5 several times.		

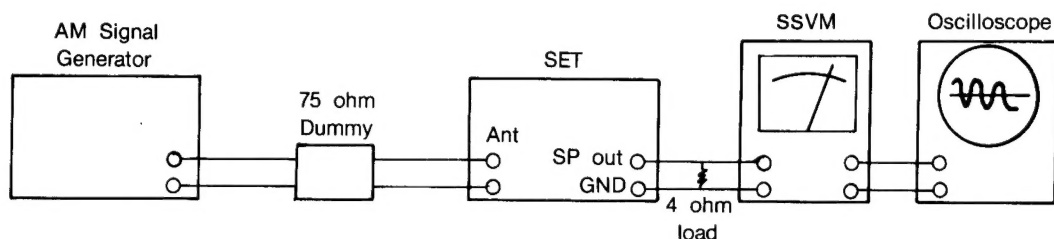


• SW RF ADJUSTMENT

Signal Generator AM Signal generator to antenna terminals through SW dummy matching network.

Adjust for the indication of SSVM or the wave form of scope to be maximum.

Sequent	Dial pointer position	SG output (MHz)	Adjustment
1	Lowest frequency	5.7	L6
2	Highest frequency	18.5	TC6
3	Repeat steps 1 and 2 several times.		
4	6.5 MHz	6.5	L5
5	18.5 MHz	18.5	TC5
6	Repeat steps 4 and 5 several times.		

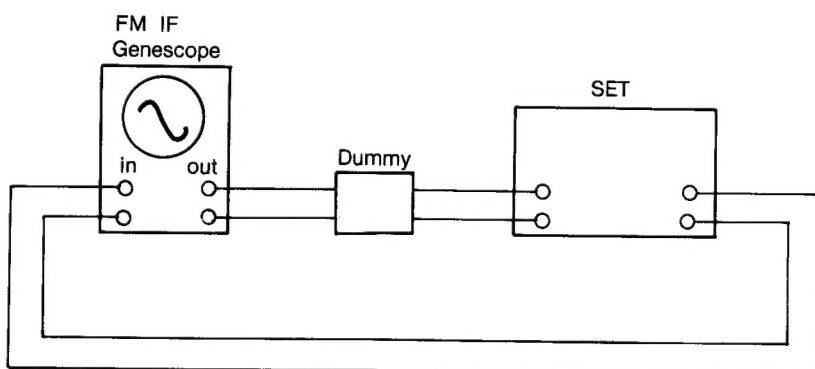


• FM IF ADJUSTMENT

IF Genescope The input connects to Pin No. 8 of IC2 and the output connects to body IC1 through dummy.

Adjust so that the wave form for appeared on genescope may be the best linear s-curve.

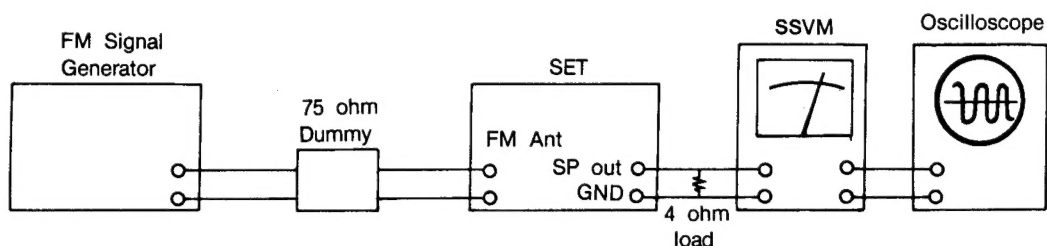
Sequent	Dial pointer position	SG output (MHz)	Adjustment
1	Highest frequency	10.7	T3
2	Highest frequency	10.7	T1
3	Repeat steps 1 and 2 several times.		



• FM RF ADJUSTMENT

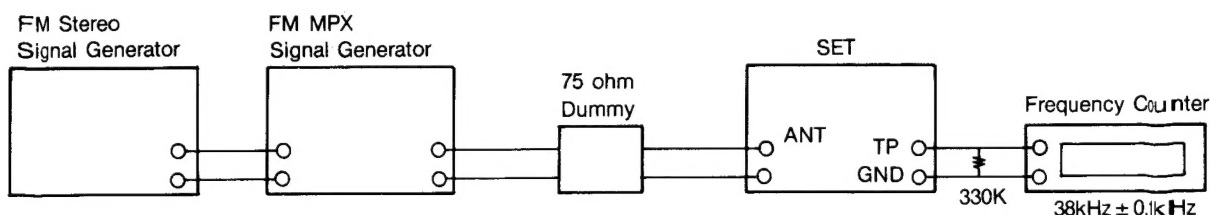
Signal Generator Connect to FM antenna through dummy.
Adjust for the indication of SSVM or the wave form of scope to be maximum.

Sequent	Dial point position	SG output (MHz)	Adjustment
1	Lowest frequency	87.35	L2
2	Highest frequency	108.25	TC1
3	Repeat steps 1 and 2 several times.		
4	90 MHz	90	L1
5	106 MHz	106	TC2
6	Repeat steps 1 and 2 several times.		

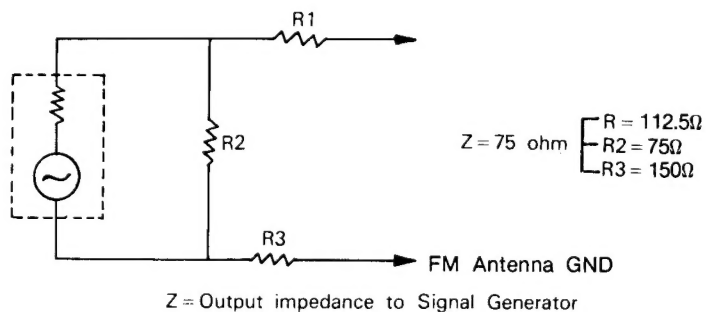


• FM MPX ADJUSTMENT

Frequency counter Connect to pin No. 6 of IC3.
Adjust RV1 so that the indication of frequency counter may be $38 \text{ kHz} \pm 0.1 \text{ kHz}$.



NOTE: FM DUMMY ANTENNA



STANDARD MAINTENANCE

• TAPE HEAD AND CAPSTAN CLEANING

Whenever a unit is brought in for service or repair, clean the tape heads, capstan drive shaft and other tape handling surfaces to ensure proper tape handling and optimum frequency response. Use a cotton swab dipped in head cleaner or denatured alcohol to clean all tape handling surfaces. Wipe dry.

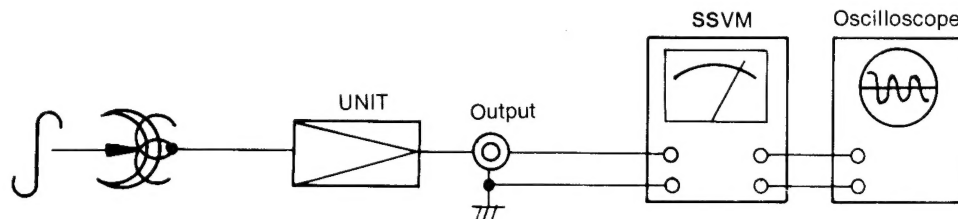
• TAPE HEAD DEMAGNETIZATION

Do not use magnetized tools near the tape heads, since they can magnetize the head. After long period of the heads will retain a small amount of residual magnetism. A magnetized head will result in loss of high frequency response and increased noise. Use a standard tape head demagnetizer and follow the instructions supplied with it to demagnetize the heads.

• AZIMUTH ADJUSTMENT

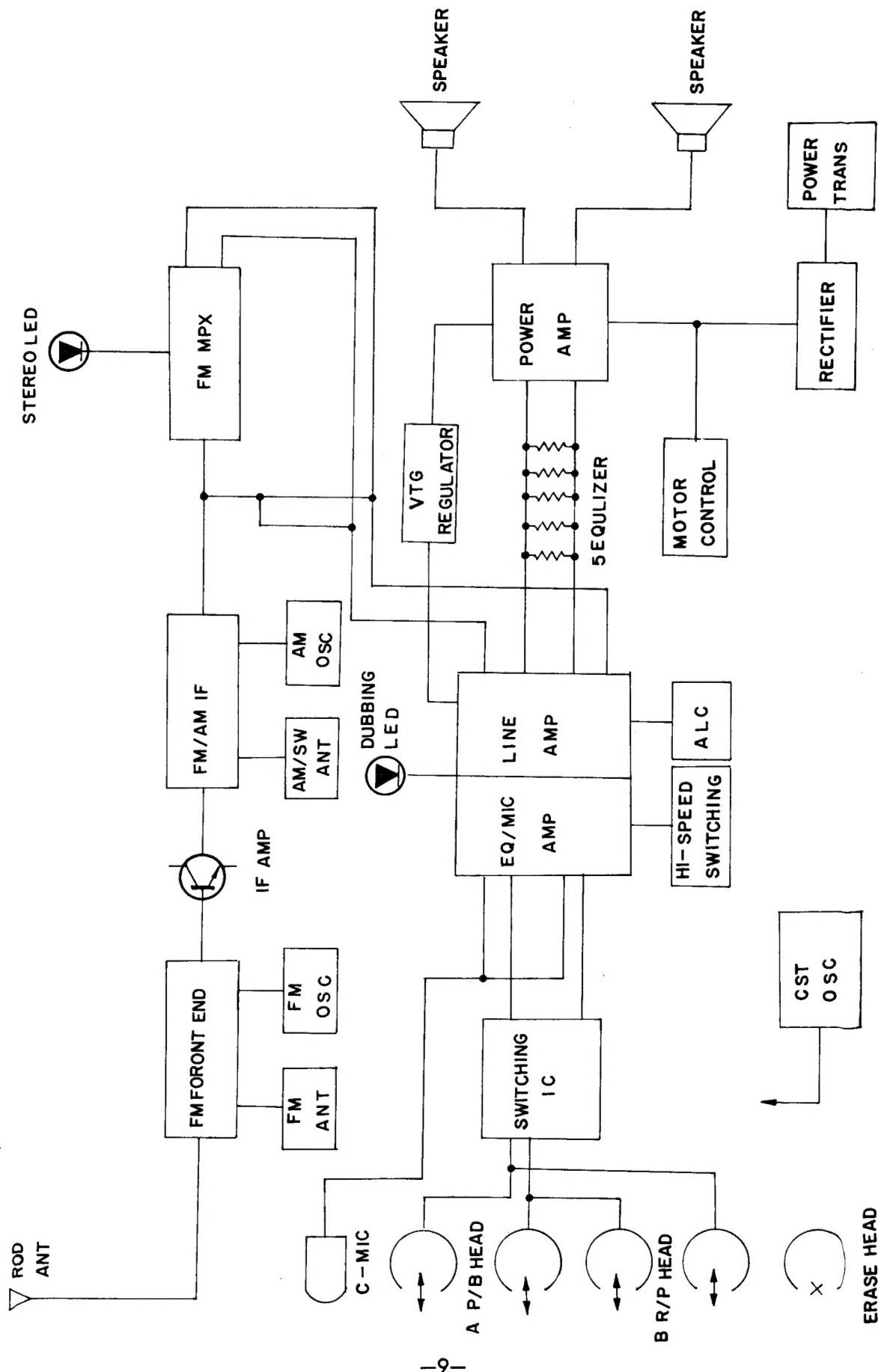
1. Azimuth adjustment is normally required when the head is replaced, or for cases of cross-talk and poor high frequency response. A test tape is required for such adjustment.
2. Connect a oscilloscope or SSVM to the right channel output. Insert a test tape into the unit (Use a test tape such as TEAC MTT-113N). Adjust the azimuth adjustment screw for maximum output onto the right channel.

Use glyptal or other non-hardening cement to lock the azimuth adjustment screw.

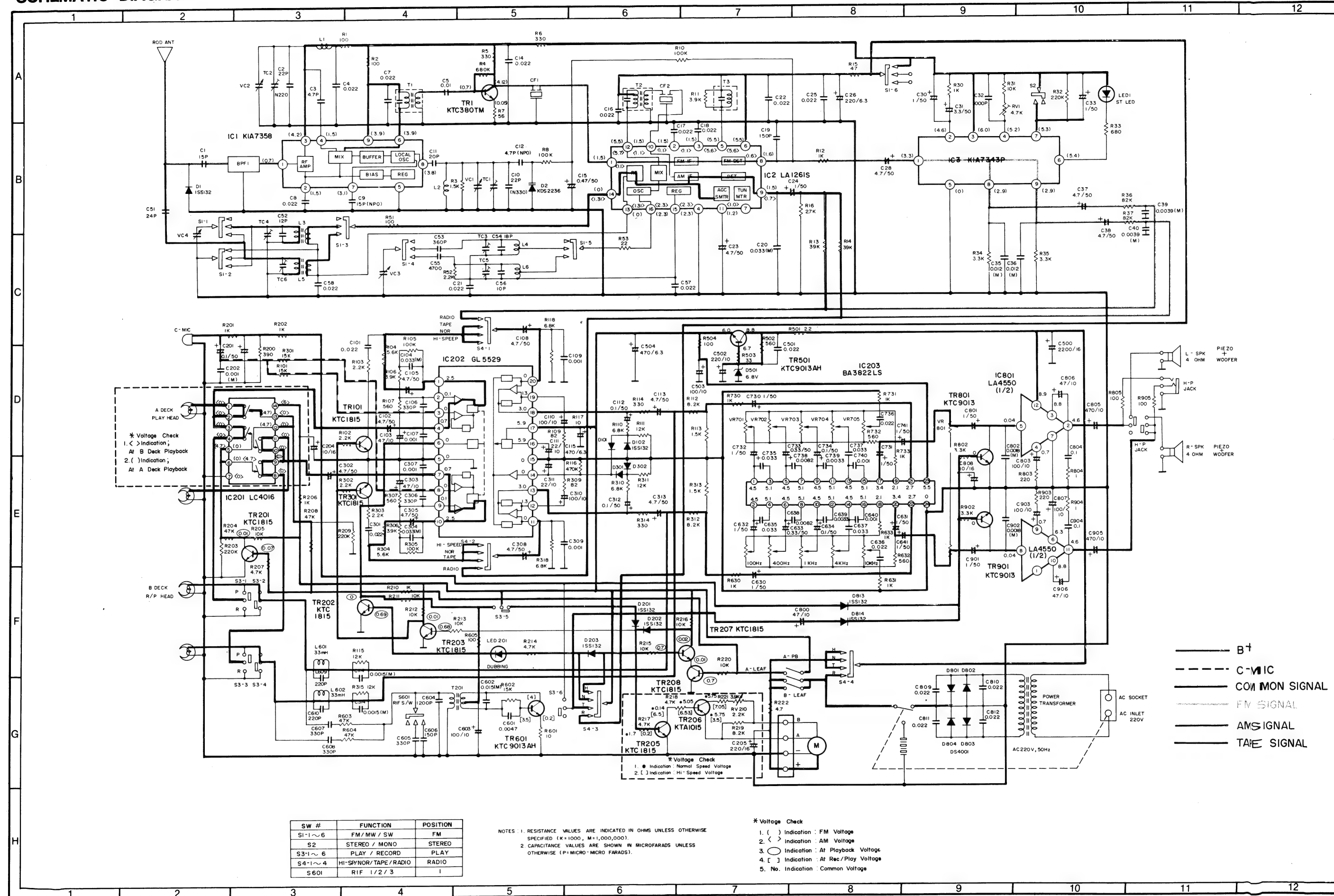


(Left channel is the same as right)

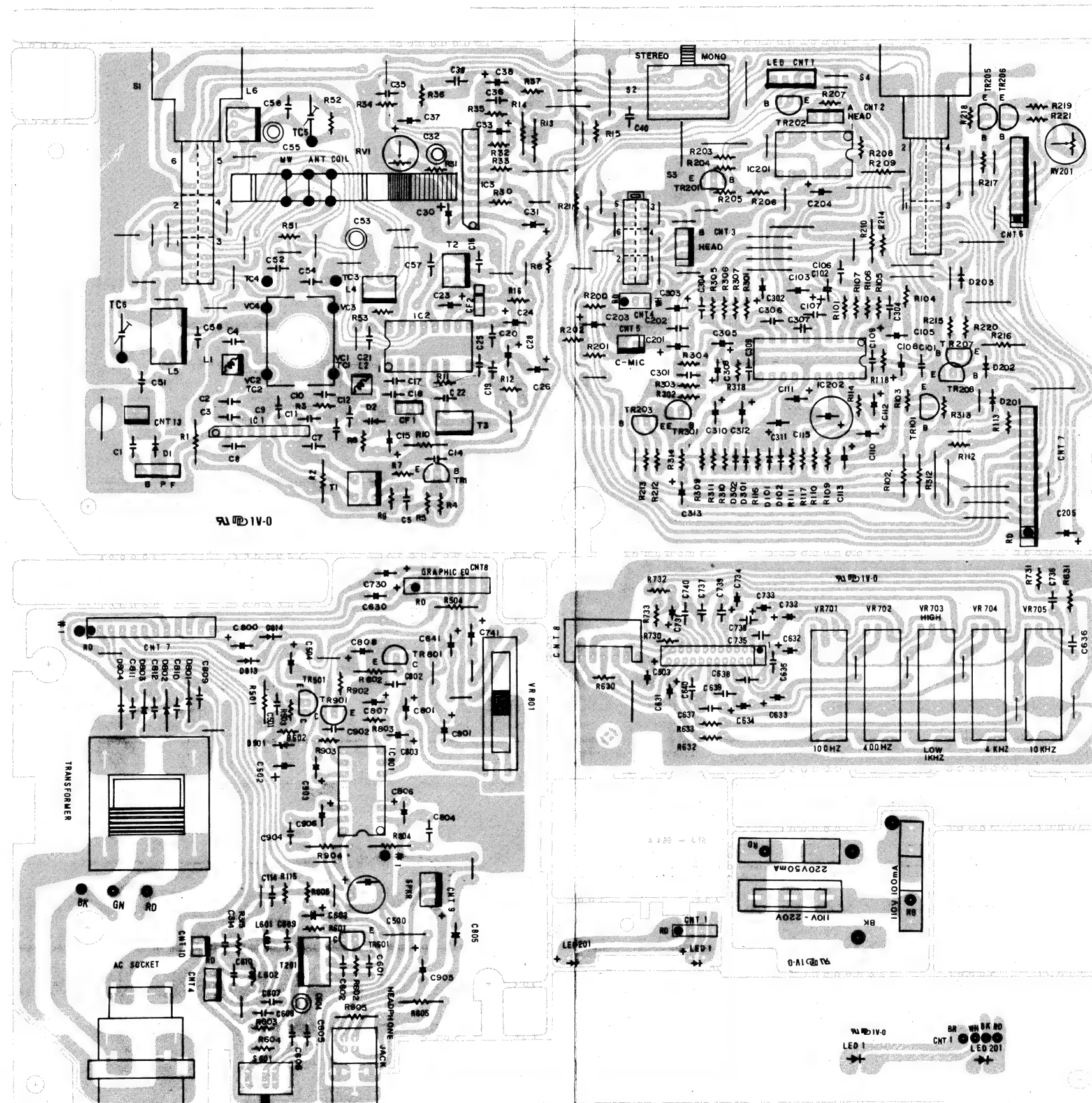
BLOCK DIAGRAM



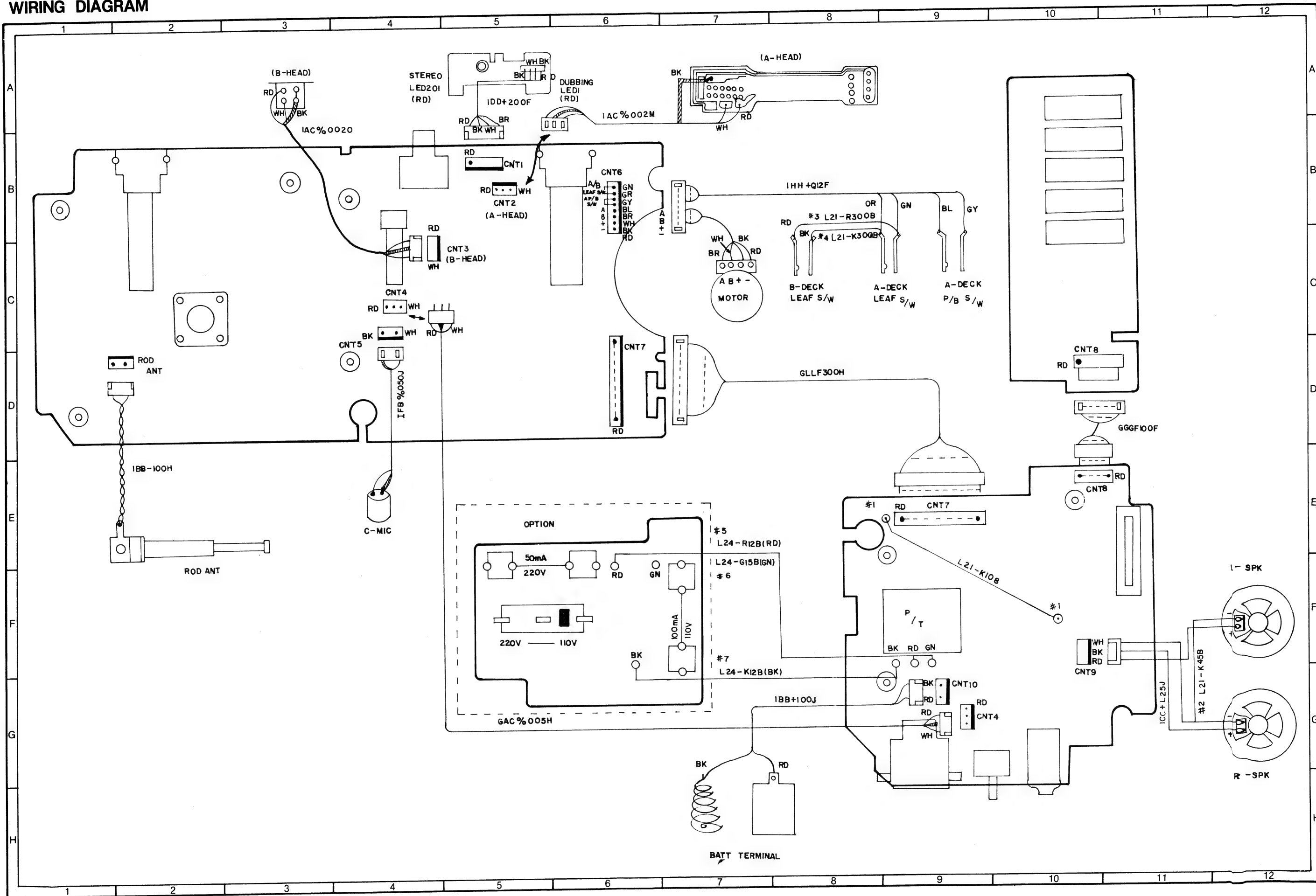
SCHEMATIC DIAGRAM



PCB LAYOUT



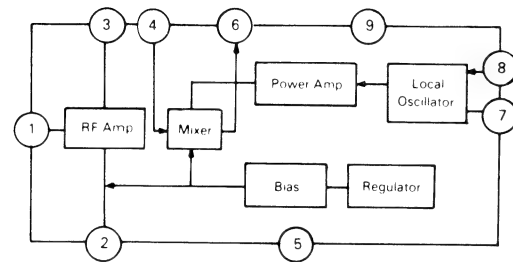
WIRING DIAGRAM



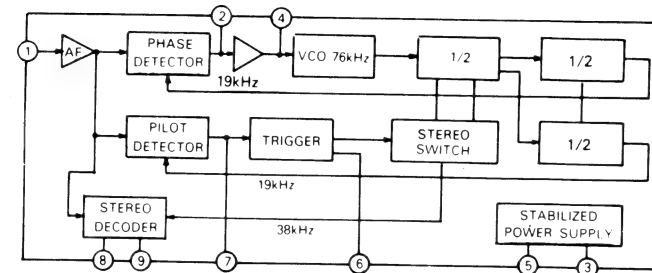
IC INTERNAL DIAGRAM

NOTES

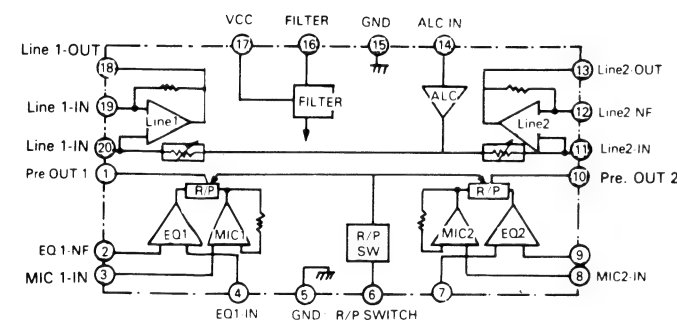
IC1 KIA7358P



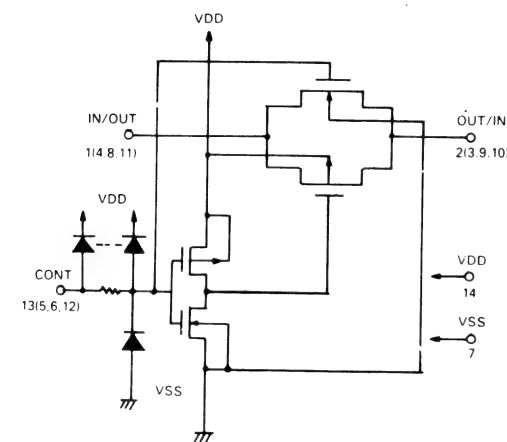
IC3 KIA7343P



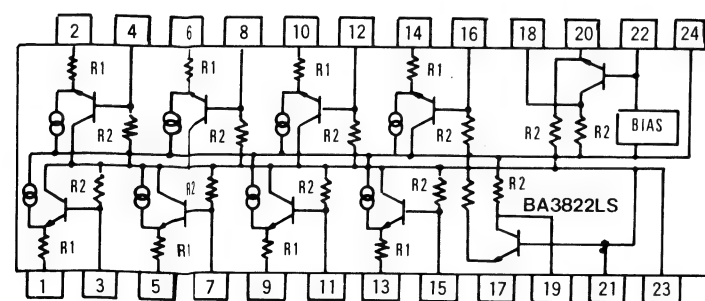
IC202 GL5529



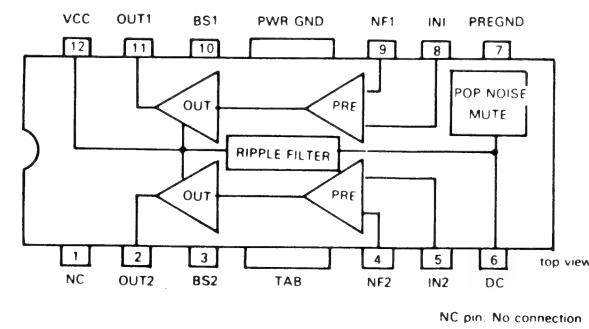
IC201 LC4016B



IC203 BA3822LS

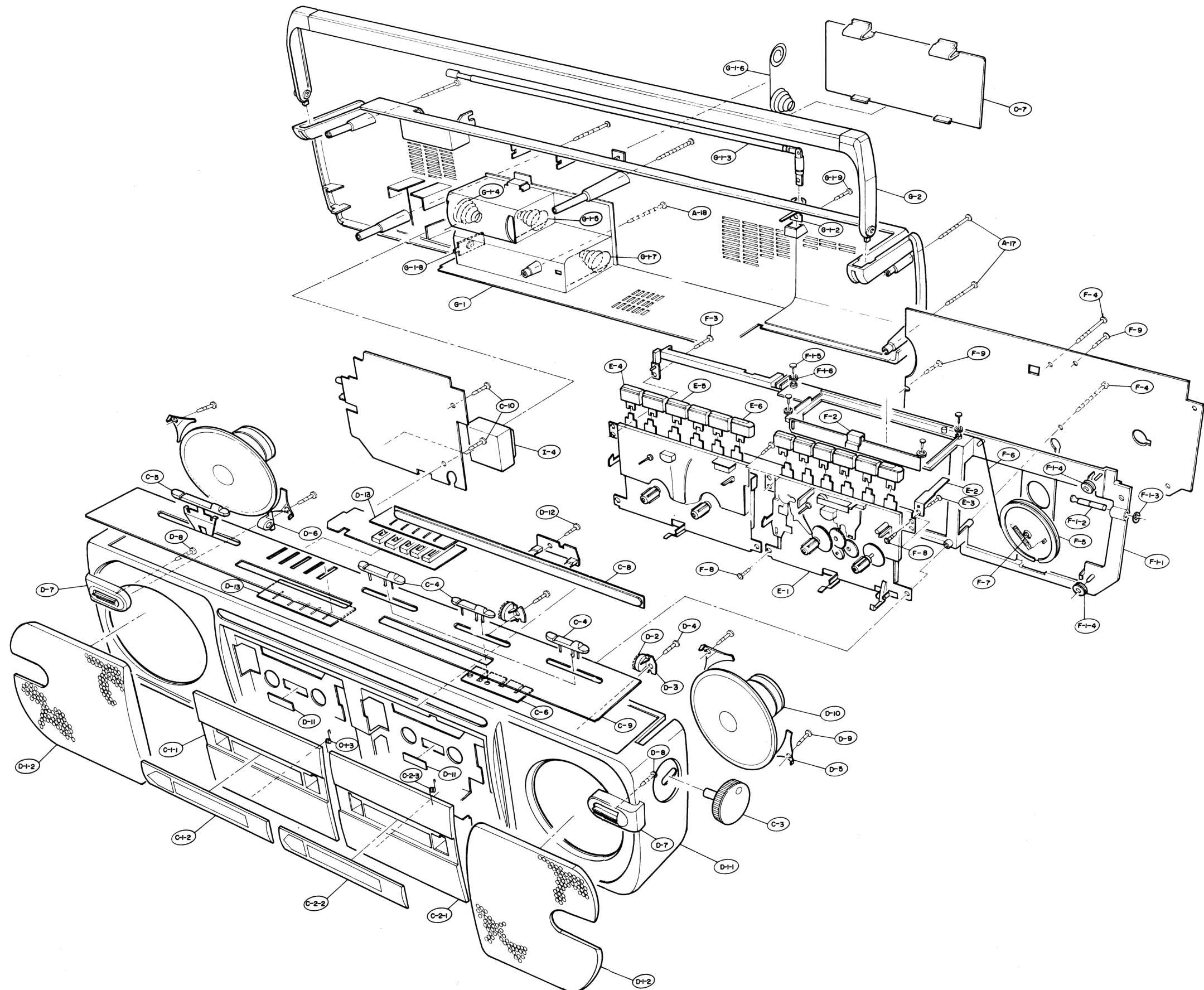


IC801 LA4550

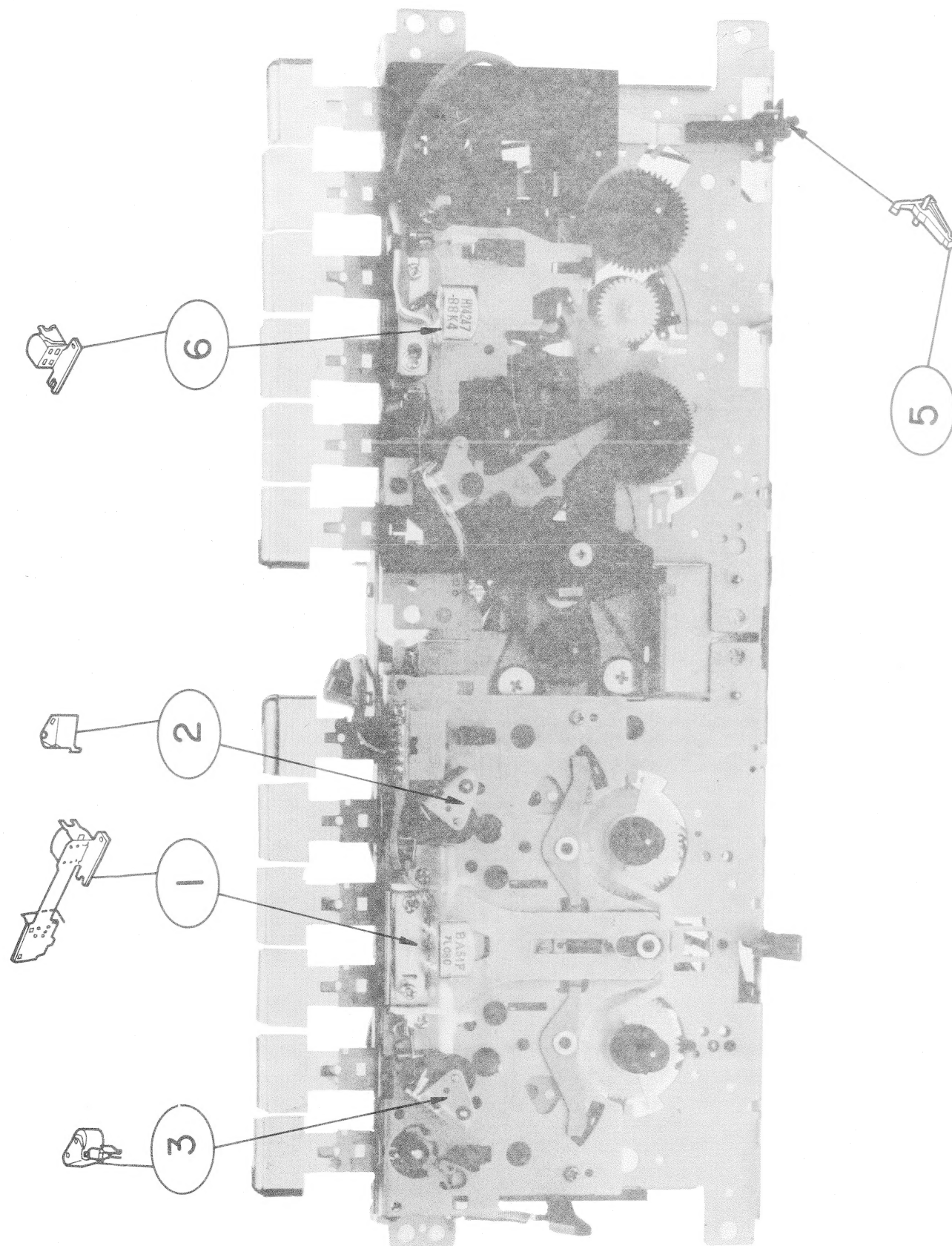


EXPLODED VIEW

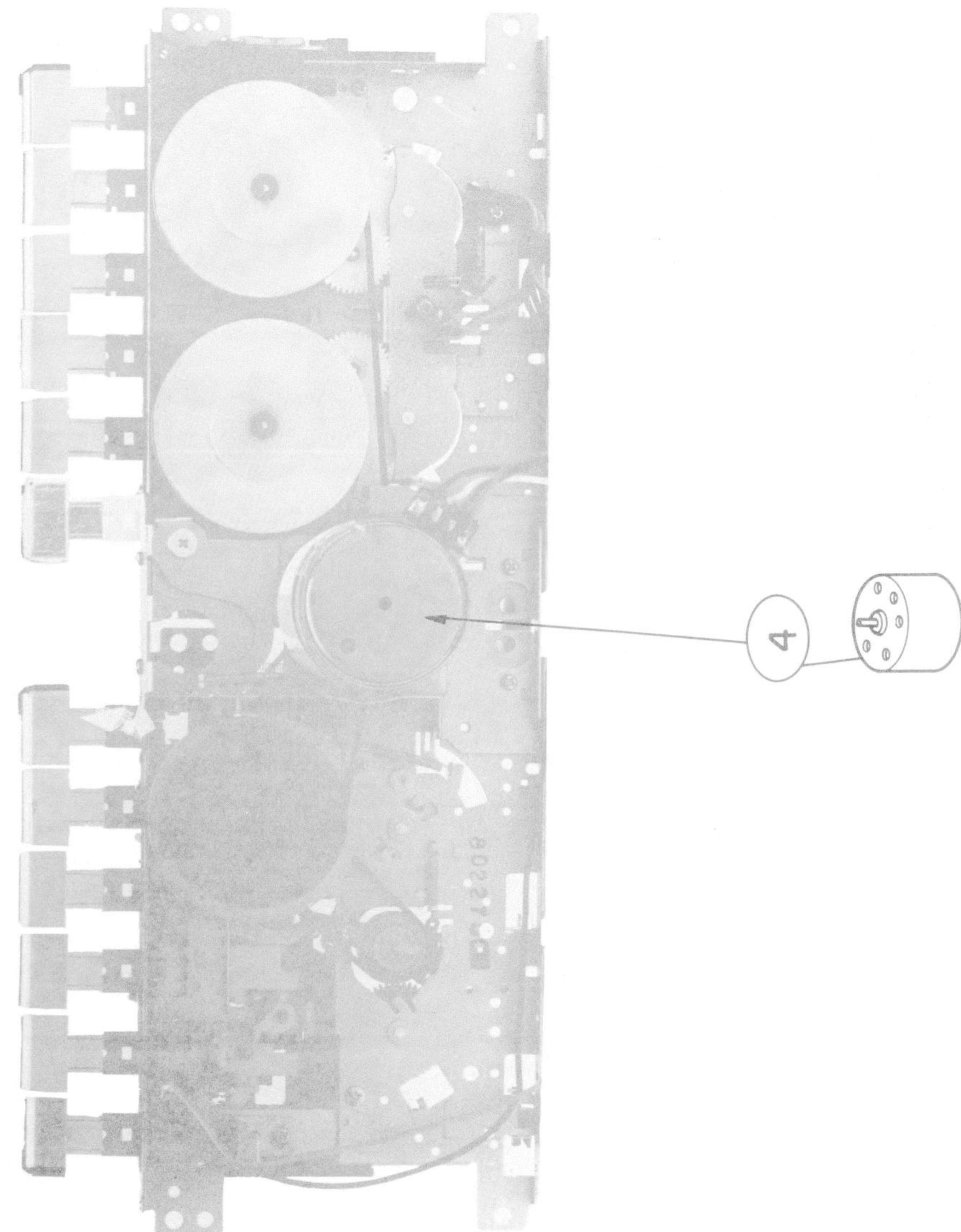
• CABINET




• FRONT OF THE DECK



• BACK OF THE DECK



REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the safety precaution of this service manual, don't degrade the safety of the receiver through improper servicing.

ELECTRICAL PARTS LIST

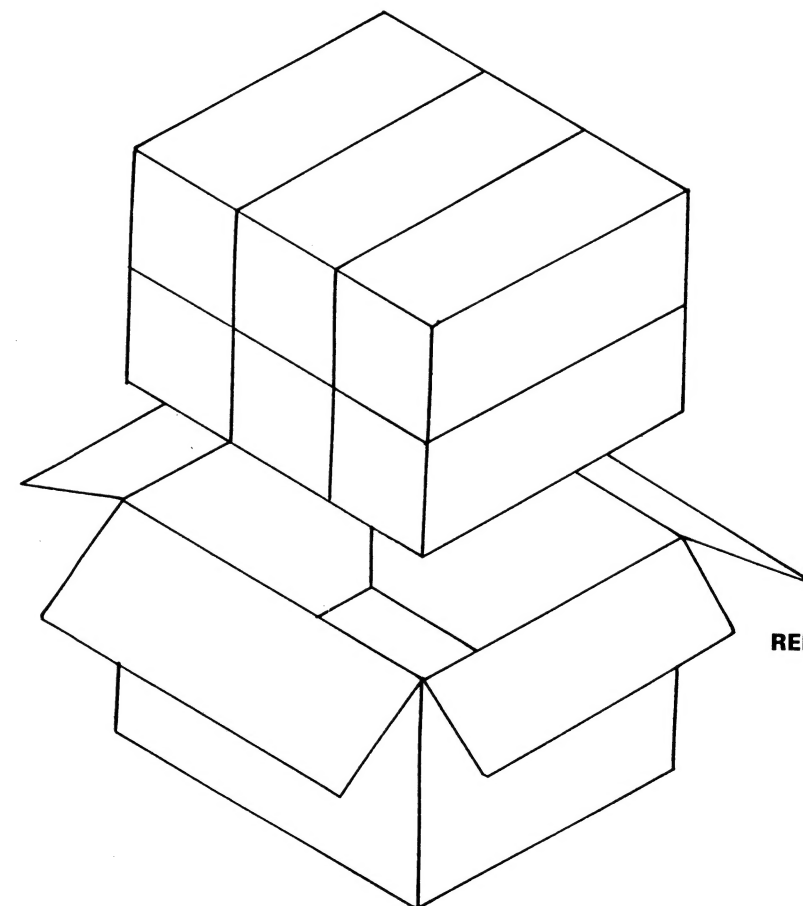
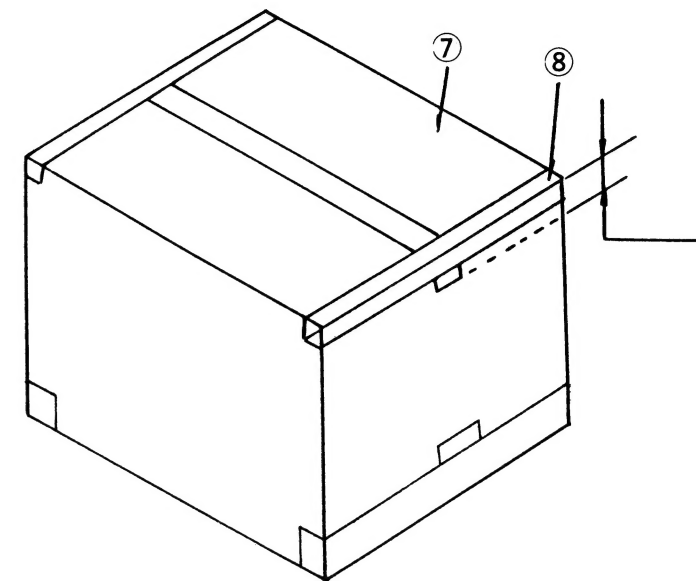
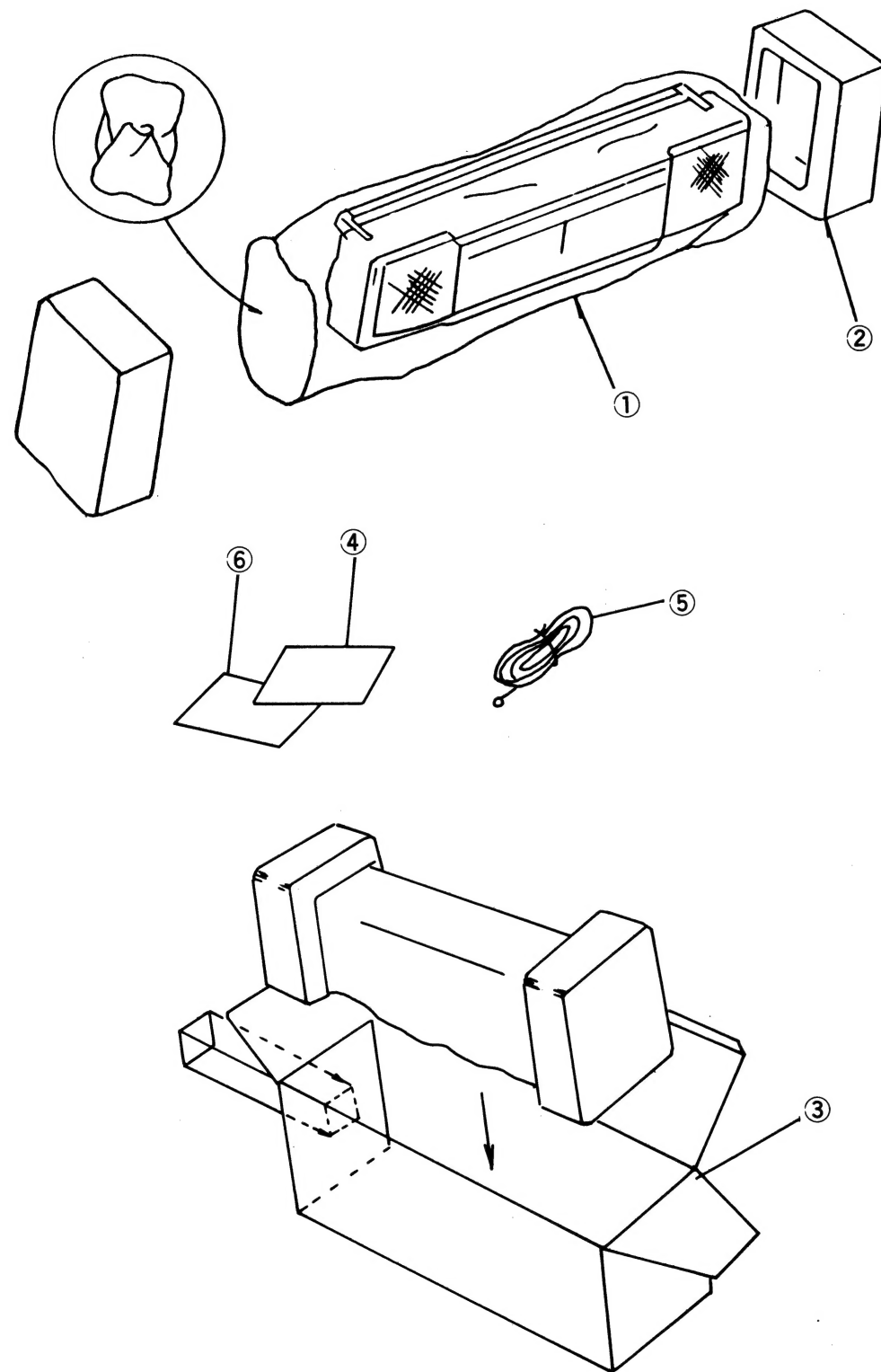
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
INTEGRATED CIRCUITS			LEDS		
IC1	668-108D	IC, KIA7358P FM FND	LED1	653-625A	LED, KLR208E, RD
IC2	668-900C	IC, LA 1261S	LED201	653-625A	LED, KLR208E, RD
IC3	668-159A	IC, KIA7343P MPX	COILS & TRANSFORMERS		
IC201	668-662C	IC, LC4016B ANALOG SWITCH			
IC202	668-660E	IC, GL5529 EQ + LINE AMP	L1	635-020A	COIL, RF (OSC) FM 2-1/4T
IC203	668-655E	IC, BA3822LS, EQ	L2	635-020B	COIL, RF (OSC) FM 1-3/4T
IC801	668-668A	IC, LA4550 POWER	L3	632-211E	COIL, ANT BAR MW 80MM (L82)
TRANSISTORS			L4	634-037N	COIL, OSC MW7 (140UH)
TR1	665-820B	TR, KEC KTC380TM-O	L5	634-609A	COIL, ANT SW10 (5.7-18.5MHz)
TR101	665T812B	TR, KEC KTC1815-Y	L6	634-020H	COIL, OSC SW7 (5.7-18.5 MHz)
TR201	665T812B	TR, KEC KTC 1815-Y	T1	644-018F	COIL, IF FM 7
TR202	665T812B	TR, KEC KTC 1815-Y	T2	644-039M	COIL, IF MW7
TR203	665T812B	TR, KEC KTC 1815-Y	T3	647-011E	COIL, DISC7
TR205	665T812B	TR, KEC KTC 1815-Y	TC5	623N023B	TRIMMER, F TCF-N-108
TR206	665-813B	TR, KEC KTA 1015-Y	TC6	623N023B	TRIMMER, F TCF-N-108
TR207	665-812B	TR, KEC KTC 1815-Y	T201	634-023A	COIL, OSC TAPE 10
TR208	665T812B	TR, KEC KTC 1815-Y	L601	637-005B	COIL PEAKING 33MH
TR301	665T812B	TR, KEC KTC 1815-Y	L602	637-005B	COIL PEAKING 33MH
TR501	665-703B	TR, KEC KTC 9013A-H	SWITCHES & JACKS		
TR601	665-703B	TR, KEC KTC 9013A-H	S1	552-645E	SW, SLIDE (BAND)
TR801	665-703B	TR, KEC KTC 9013A-H	S2	552N077A	SW, SLIDE (MODE MONO/STEREO)
TR901	665-703B	TR, KEC KTC 9013A-H	S3	552-606F	SW, SLIDE (R/P SWITCH)
DIODES			S4	552-645G	SW, SLIDE (FUNCTION)
D1	651T031A	DIODE, SWITCH 1SS132	S601	552-646A	SW, SLIDE (RIF SWITCH)
D2	654-418A	DIODE, AFC KDS2236	HEADPHONE JACK		
D101	651T031A	DIODE, SWITCH 1SS132			
D102	651T031A	DIODE, SWITCH 1SS132			
D201	651T031A	DIODE, SWITCH 1SS132			
D202	651T031A	DIODE, SWITCH 1SS132			
D203	651T031A	DIODE, SWITCH 1SS132			
D301	651T031A	DIODE, SWITCH 1SS132			
D302	651T031A	DIODE, SWITCH 1SS132			
D501	654-723C	DIODE, ZENER DZ 6.8BM			
D801	652-005C	DIODE, RECT DS4001			
D802	652-005C	DIODE, RECT DS4001			
D803	652-005C	DIODE, RECT DS4001			
D804	652-005C	DIODE, RECT DS4001			
D813	651T031A	DIODE, SWITCH 1SS132			
D814	651T031A	DIODE, SWITCH 1SS132			
			MISCELLANEOUS		
			SPKR	541-172B	SPEAKER
			PIEZO	541-186B	W.I./GSI.
			SPKR		
			VARICON	622-012B	VARICON, P2S-22BPT
			△C-MIC	542-035B	CONDENSER MIC
			BPF1	616-011G	FILTER, BP BPM138(88/108MHz)
			CF1	616-008A	FILTER, C SFE10.7 MS2 (BL, RD, OR)
			CF2	616-003E	FILTER, C AM SFU465B
			RV1	613-002C	VR, SEMI-FIXED SR19R-4.7KB
			RV201	613-002A	VR, SEMI-FIXED SR19R-1KB
			VR701	612-619F	VR, SLIDE

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
VR702	612-619F	VR, SLIDE	E	412-711A	DECK ASS'Y
VR703	612-619F	VR, SLIDE	E-1	419-011R	DECK MECH TN521ZVW-158
VR704	612-619F	VR, SLIDE	E-2	333-004C	LEVER REC
VR705	612-619F	VR, SLIDE	E-3	MRC0918J	SCREW M/S (ROUND) 2×3 FZMY
VR801	612-620E	VR, SLIDE	E-4	273-711A	KNOB DECK-1
△ AC SOCKET	577-005C	SOCKET, AC-IN	E-5	273-712A	KNOB DECK-2
POWER	641N741C	TRANS, POWER 220V SEMKO	E-6	273-713A	KNOB DECK-3
△ TRANS			F	313-711A	CHASSIS ASS'Y
HEAT SINK	255-086C	HEAT SINK	F-1	313-712A	CHASSIS SUB ASS'Y

CABINET PARTS LIST

A-1	481-793A	INSTRUCTION	F-1-1	313-501A	CHASSIS
A-17	353-041I	SCREW 3×45 FZMY	F-1-2	423-298B	SHAFT TUNING
A-18	353-025K	SCREW, SPECIAL 3×12 FZMY	F-1-3	WED2600Q	E-RING D5.0 (SK-5) BK
A-20	681-035C	POWER CORD	F-1-4	434-038B	ROLL DR (D;10 D1;4.1 D2;8)
C-1	226-710A	DOOR CST SUB ASS'Y (A)	F-1-5	423N254A	SHAFT, ROLLER
C-1-1	226-711A	DOOR CST	F-1-6	434-017A	ROLLER (D;6.5 D1;2.1 D2;4.5)
C-1-2	226-791A	WINDOW DOOR	F-2	361-711A	POINTER
C-2	226-710B	DOOR CST SUB ASS'Y (B)	F-3	353-025K	SCREW, SPECIAL 3×12 FZMY
C-2-1	226-711B	DOOR, CST	F-4	353-041I	SCREW 3×45 FZMY
C-2-2	226-791B	WINDOW DOOR-B	F-5	432-617B	PULLY, VARICON
C-3	271-102A	KNOB TUNING	F-6	886-001O	DIAL CORD
C-4	273-176A	KNOB FUNCTION	F-7	442N064A	SPRING, M
C-5	273-177A	KNOB VOLUME	F-8	353-025F	SCREW, SPECIAL 3×8 FZMY
C-6	324-934A	HOLDER FUNCTION	F-9	353-025F	SCREW, SPECIAL 3×8 FZMY
C-7	221-674C	COVER BATTERY	G	215-652A	CASE REAR ASS'Y
C-8	442-864E	SPRING EJECT	G-1	215-709A	CASE REAR SUB ASS'Y
C-9	246-712A	DECO TOP	G-1-1	217-512A	CASE REAR
C-10	353-025K	SCREW, SPECIAL 3×12 FZMY	G-1-2	254-013B	CONTACT ANT
C-11	472-999B	FELT	G-1-3	532-209A	ROD ANT
D	215-651A	CASE FRONT ASS'Y	G-1-4	442N282H	SPRING BATTERY
D-1	215-711A	CASE FRONT SUB ASS'Y	G-1-5	442-714E	SPRING BATTERY
D-1-1	217-511A	CASE FRONT	G-1-6	442-203A	SPRING BATTERY
D-1-2	224-711A	GRILL SPK	G-1-7	442-714B	SPRING, BATTERY (A)
D-1-3	236-792A	WINDOW SCALE	G-1-8	256N404C	PLATE, BATTERY CONTECT
D-2	444-111A	DAMPER ASS'Y (M=10.4/T;13)	G-1-9	353-025G	SCREW, SPECIAL 3×10 FZMY
D-2-1	444-112A	DAMPER GEAR	G-2	261-711A	HANDLE ASS'Y
D-2-2	324-112A	HOLDER GEAR	G-2-1	261-712A	HANDLE
D-4	353-025F	SCREW, SPECIAL 3×8 FZMY	G-2-2	324-711A	HOLDER HANDLE
D-5	321N068A	BRACKET, SPEAKER	H	511-664A	PWB ASS'Y
D-6	341-203A	C-MIC RUBBER	H-1	513-664A	PWB
D-7	246-711A	DECO SPK	DECK MECHAISM PARTS LIST		
D-8	353-025F	SCREW, SPECIAL 3×8 FZMY	1	99T-2140	P. HEAD P-5244BA-54F
D-9	353-025F	SCREW, F SPECIAL 3×8 FZMY	2	99T-2220	PINCH ROLLER (F) ASS'Y
D-10	541-172B	SPEAKER 090K21	3	99T-2221	PINCH ROLLER (R) ASS'Y
D-11	256-850A	PLATE REFLECT	4	99T-3008	MOTOR SHU-9L
D-12	353-025F	SCREW, SPECIAL 3×8 FZMY	5	99T-2238	RECORD SAFETY LEVER
D-13	221-566A	EQ FELT	6	99T-3022	HEAD
D-14	541-186B	W.I./GSI. WSS-20-15/GE-20S-15			

PACKING OF THE SET



REF. NO.	PART NO.	DESCRIPTION
1	292-022U	BAG HIGHDEN
2	283-611A	PACKING
3	285-695A	BOX GIFT
4	481-793A	INSTRUCTION
5	681-035C	POWER CORD
6	243-645V	DBP LETTER
7	287-205L	BOX SHIPPING
8	926-0005	P.P TA PE